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The genus *Olgia* RADOSZKOWSKI 1877 with description of a new species (Hymenoptera, Crabronidae, Bembicinae)

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Abstract: The species of *Olgia* are diagnosed, keyed, their distribution summarized, and new records are given. *Olgia josefgusenleitneri*, new species, from Syria and Jordan is described. The phylogenetic relationships are briefly discussed, Central Asia is the supposed origin of *Olgia*.

Key words: Hymenoptera, Crabronidae, *Olgia*, key, new species, Palaearctic region.

Introduction

Olgia RADOSZKOWSKI is a small and relatively unknown genus of "Sphecid" wasps in the subfamily Bembicinae with 6 species occurring in the western and central Palaearctic region. It was revised by DE BEAUMONT (1953) for the first time. He summarized the knowledge about the two described species and added three more. NEMKOV (1992) provided a key for the species of *Olgia* with distribution records from the former USSR.

The aim of the present paper is to present an updated key for the species of *Olgia* and to describe a new species. The present study based mainly on the remarkable Crabronidae collection of the Oberösterreichisches Landesmuseum in Linz/Austria. The collection includes approximately 100 specimens of western and central Palaearctic specimens of *Olgia* collected by the Czech scientists M. Halada and K. Kocourek. Material from other collections was also examined.

Methods

Diagnosis: All treated species except the new species are described in detail by DE BEAUMONT (1953). To avoid repetition of these descriptions, a short diagnosis in the text seems sufficient to characterize the species in the present paper.

Characters: The terminology employed in this paper follows BOHART & MENKE (1976). The term 'macropunctures' is used for punctures with a diameter as big or bigger than a sixth of the diameter of the lateral ocellus, while "micropunctures" are used for punctures smaller than a sixth of the diameter of the lateral ocellus.

Sources of material

Specimens from the following institutions and private collections were examined¹ (abbreviations used are given).

Arens.....	private coll. Werner Arens, Bad Herfeld/Germany
Nemkov ²	coll. Nemkov, Vladivostok/Russia
OLL.....	Oberösterreichisches Landesmuseum/Biologiezentrum Linz/Austria.
Schlaefle.....	private coll. Wolfgang Schlaefle, Kaiseraugst/Switzerland
SE	private coll. Christian Schmid-Egger, Hersching/Germany

Diagnosis of *Olgia*

Olgia is placed in the subfamily Bembicinae LATREILLE and the tribe Bembicini LATREILLE, together with *Gorytes* LATREILLE and related genera (MELO 1999, PULWASKI 2003). *Olgia* is close to the neotropical and Australian genus *Clitemnestra* SPINOLA, but more advanced (BOHART & MENKE 1976). The genus includes small (5-8 mm), yellow/black colored wasps. At first glance *Olgia* specimens resemble large *Nysson* LATREILLE specimens (Crabronidae) because of their stocky habitus. The genus *Olgia* is included in two recent keys for European Crabronidae (DOLLFUSS 1991, BITSCH & LECLERQ 1993).

Within the tribe Bembicini, the genus can be recognized by the following character combination: marginal cell of forewing longer than submarginal cell I, submedial cell of hindwing ending long before origin of media (fig. 2); episternal sulcus present, mesonotum laterally (along tegula) with furrow, its apical corner pointed, corners longer than medial part of apical border of mesonotum (figs. 4, 5). Eyes diverging upwards and downwards, its closest distance is near antennal socket (fig. 9). *Olgia* occurs in the Mediterranean area to Central Asia.

Key to species of *Olgia*, males and females

- 1 Apical border of terga II-IV (II-V in males) with dense row of black bristles; bristles as long as scape (fig. 1). Armenia, Turkey, Bulgaria *O. spinulosa* DE BEAUMONT
- Apical border of terga without such bristles 2
- 2 Terga II-IV (in dorsal view): each tergum basally and apically constricted (as typical for *Cerceris* species) (fig. 3, 6). Mesonotum with large macropunctures, punctures 0.3-0.5x diameter of hindocellus. Central Asia..... *O. modesta* RADOSZKOWSKI
- Terga not constricted, gaster evenly rounded (fig. 7, 8). Mesonotal macropunctures smaller, 0,1-0.2x diameter of hindocellus..... 3
- 3 Mesonotum shiny between macropunctures. No micropunctures visible 4
- Mesonotum with micropunctures between macropunctures, interspaces dull 5

¹ For type depositories of already described species, only the town of the depository is given (London.= British Museum for Natural History).

² The records listed in NEMKOV (1992) are not examined, but all listed here.

- 4 Scutellum and metanotum black. Pronotum laterally rounded, medially as long as or longer than laterally (cf. fig. 5). Legs black and yellow. Central Asia.....*O. maracandica* RADOSZKOWSKI
- Scutellum and metanotum with yellow marks. Pronotum laterally enlarged (view from above), with right-angled corners, medially shorter than laterally (cf. fig. 4). Legs reddish and yellow. North west Africa. *O. bensoni* DE BEAUMONT
- 5 Apical margin of clypeus black. Clypeus (in profile) only medially somewhat bulged. Mesonotal macropunctures in average 2-3 diameters apart, in direct comparison smaller than in *josefgusenleitneri*. Propodeal enclosure all shiny. Body color whitish-yellow. Hindfemur all black. Tergum V in females and tergum VI in males black. Greece, Bulgaria, Turkey, Ukraine *O. helena* DE BEAUMONT
- Apical margin of clypeus reddish. Clypeus (in profil) even rounded. Mesonotal macropunctures in average one diameter apart, in direct comparison larger than in *helena*. Propodeal enclosure with barley visible structure. Body color lemon yellow. Hindfemur apcially yellow and reddish. Tergum VI with yellow band. Syria and Jordan *O. josefgusenleitneri* new species, male

***Olga bensoni* (DE BEAUMONT) (Fig. 8)**

Gorytes bensoni DE BEAUMONT 1950: 424, male, female. Holotype: female, Morocco: Mogador (London). – In *Olga*: DE BEAUMONT 1953: 214 (revision; male; Algeria); NEMKOV 1992: 947 (in key).

D i a g n o s i s : *Olga bensoni* is characterized by the extended and lemon yellow body color (males with shortly interrupted or continuous tergal bands, pronotum and metanotum all yellow, scutellum yellow in apical half, females with less developed yellow color), an overall shiny body surface (especially in parts with yellow color), reddish-yellow legs and the shiny mesonotum with only few micropunctures in basal forth. Another character is the laterally enlarged and right-angled pronotum, which is medially somewhat narrower than laterally. *Olga josefgusenleitneri* new species shares the extended and lemon-yellow color with *O. bensoni*, but can easily be recognized by the dull body surface, the mesonotal micropunctuation, the narrower pronotum and the reddish apical margin of clypeus (black in *O. bensoni*).

D i s t r i b u t i o n : Morocco, Algeria, Tunisia.

R e c o r d s : Morocco: 35 km W of Taza; 10 km N Agadir; 40 km S Guercif; Tassademt/50 km N Agadir; 10 km SE Ait Baha/60 km SE Agadir; H. Atlas/Oulad Berrehil; Oulad Teima; Essaouira; Lot Journu/env. N. Abjeli; M'saken; Taroudant; Ain Benimathar (OLL) – Essaouira/E 27 km; Khemiset (SE) (21 males flight period 19 Apr - 9 May, 1 male 23 Mar, 3 females flight period 21 Apr – 18 Mai) - female 13 May 1964 Marakesch (Schlaefle) - Tunisia: male 3 June 1994 25 km NW Kasserine (OLL).

***Olga helena* DE BEAUMONT**

Olga helena DE BEAUMONT 1953: 218, male, female. Holotype: male, Greece: Athenes (Vienna).— DE BEAUMONT 1965: 28 (Greece), 1969: 84 (Turkey); DOLLFUSS 1989: 11 (holotype in Vienna); NEMKOV 1992: 948 (revision); BLÖSCH 2002 (Greece, island of Kos, life history), BITSCH et al. 1997: 234. (key), DOLLFUSS 1991: 191 (key).

As *Gorytes maracandicus*: HANDLIRSCH 1888: 365 (description of male) and 1895: 866 (Turkey: Patara; additional description), corrected to *Olga helena* by DE BEAUMONT 1953: 218.

D i a g n o s i s : The species is characterized by dense mesonotal micropunctuation and a relatively sparse macropunctuation (punctures in average 2-3 diameters apart) and a black apical margin of the clypeus. The body color is whitish-yellow and reduced, compared with *O. josefgusenleitneri* new species and *O. bensoni*. The hindfemur is black in

all examined specimens, whereas it is apically yellow or largely reddish colored in remaining species except *O. maracandica*. The latter has also a black hindfemur, and can be recognized by the characters given in the key.

Life history: BLÖSCH (2002) reported a 2,5 mm long larva of the leafhopper *Hysteropterum* spec. (Homoptera, Issidae) as prey species of *O. helena*. He found the specimens in Kos (Greece Island) within a colony of *Bembecinus peregrinus* SMITH (Crabronidae) and supposed, that the species is nesting in hard clay soil. Werner Arens (in litt.) found the species in Greece always in the vegetation stripe in the middle of unpaved agricultural roads.

Distribution: Bulgaria, Greece, Turkey, Ukraine.

Records: Bulgaria: male 2 females 23 May 1983 Melnik; female June 1969 Sandanski; male Aug 1970 Neseber (OLL) – Greece: 1 male Tessaloniki May 1963 (Schlaefle) – female 17 June 1997 10 km W Olympia, 27 May 1998 (male), 13 May 2000 (male); Antikes Samikon near Krouni: 4 June 1995 (male), 28 May 1998 (5 males), 12 May 2000 (female); Alt-Korinth 31 May 1996 (female), Sparta, Menelaion 19 May 1995 (male), 5 June 1996 (male), 21 May 1997 (male); Avia bei Kalamata: 5 May 2000 (6 males); Amarianos/E Agia Triada, 10 May 1996 (male) (Arens) – Turkey: Göreme; Halfeti/Birecik; 25 km E Golbasi; 10 km W Ürgüp; Tuzlagozu/Baykan; Taskesigi/100 km E Antalya; 30 km N Kutahya; Osmanieli; Bolu/17 km S Seben; N of Akseki (OLL); Madenshehir/Konya; Kilis/Gaziantep; Karaman/Konya (SE) (flight period: 20 males 3 May – 20 June, 15 females 31 May – 23 June) – Ukraine (Crimea): 2 females 20 May 1996 Kerch; male Sevastopol 1 June 1908 [*Kaufmannia maracandica* det. Gussakovskij 1938] (SE); Sevastopol; Alushta; Belbek (Nemkov)

Olgia josefgusenleitneri SCHMID-EGGER, new species

Diagnosis: *Olgia josefgusenleitneri* is characterized by a reddish apical clypeal margin, a dense mesonotal macropunctuation with dull and finely micropunctuated interspaces and a finely microsculptured propodeal enclosure. The light color is lemon yellow and extended as in *bensoni* (cf. fig. 8), whereas *O. helena* and *O. maracandica*, both have reduced whitish-yellow body marks. *O. helena*, which may overlap in distribution with *O. josefgusenleitneri*, can be distinguished by the characters given in the key. *O. maracandica* from Central Asia has an all black scutellum and metanotum (yellow in *O. josefgusenleitneri*).

Description of male: 6-7 mm. Color: Lemon yellow are: face until antennal socket, large band along inner margin of eye, mandible in basal half, ventral half of scape, pronotum in dorsal half, pronotal lobe, spot in upper part of mesopleuron (as large as pronotal lobe), basal third of tegula, small spot in outer-basal corner of scutellum, large band on metanotum, large bands on terga I-V, which are laterally double as wide as medially and shortly interrupted, tergum VI with large band. Fore- and midfemora below with large yellow band, hindfemur apically below with yellow spot. Tibiae and tarsi all yellow, last tarsal segments reddish yellow. Midcoxa with yellow spot. Apical clypeal margin reddish, flagellomeres reddish, first flagellomeres darkened above.

Morphology: Flagellomeres longer than wide. Clypeus 0.6x as long as wide, in lateral view quarter-circle like bulged. Frons and vertex densely punctured, with shiny interspaces (0.5-1 diameter apart). Mesonotum and scutellum dull, with fine micropunctures, and with large macropunctures in between. Macropunctures irregular, 0.2-2 diameters apart. Mesopleuron and propodeum (except propodeal enclosure) with even and dense macropunctures, similar to frons, interspaces shiny. Propodeal enclosure with barely

visible longitudinal wrinkles in baso-medially part and with irregular fine sculpture baso-laterally. Terga and sterna densely and evenly punctuate (similar to puncture of propodeum), interspaces shiny. Apical margin of sterna III and IV with row of erect pale-brownish setae, which form a dense brush. The brush is as long as a third of sternal wide (this character occurs in all *Olgia* males). Forewing venation dark brown.

Female: Unknown. Because of the weak sexual dimorphism in *Olgia*, the female may be expected to have the same diagnostic characters as the male. Only the extension of the light body color may be reduced, and color might be paler as in male, as in other *Olgia* species.

Etymology: The species is named after Hofrat Dr. Josef Gusenleiter, Linz/ Austria in recognition of his services to the research in Hymenoptera and especially in Vespidae.

Distribution: Jordan, Syria.

Type Material: HOLOTYPE: male "Syria south, 30 km S Suwayda, Dibbim 15-17 May 1996 leg Marek Halada (OLL) – PARATYPES: male, same data as Holotype; male "JORDAN NW North Shuna 29-30 April 1996 leg. Ma. Halada" (OLL).

***Olgia maracandica* (RADOSZKOWSKI)**

Kaufmannia Maracandica RADOSZKOWSKI 1877: 43, male, female. incorrect original capitalization. Syntypes: Kazakhstan: Chardara (Moscow).--RADOSZKOWSKI 1891: 584 (male genitalia). – In *Gorytes*: nec HANDLIRSCH 1888: 365 and 1895: 866 (= *Olgia helena*) - In *Olgia*: DE BEAUMONT 1953: 216 (revision); NEMKOV 1992: 948 (revision).

Diagnosis: *Olgia maracandica* is similar to *O. helena* and can be distinguished by the character combination of an all black scutellum and metanotum (with yellow marks in *O. helena* and remaining species) and with shiny mesonotal interspaces (with micro-punctures in *O. helena*). The yellow color is less extended, compared with *O. helena* and and other species. *Olgia helena* was not recognized by former authors (e.g. by Gussakovskij), what means that citations of *O. maracandica* from western Asia or eastern Europe (e.g. Crimea region in Ukraine) refer to *O. helena*. *Olgia maracandica* is restricted in its distribution to Central Asia only.

Distribution: Kazakhstan, Uzbekistan.

Records: South Kazakhstan: Chardara steppe (Nemkov) – Uzbekistan: Golodnaya Step (Nemkov); A female with handwritten unreadable label [*Kaufmannia maracandica* det. Gussakovskij 1938] (SE).

***Olgia modesta* RADOSZKOWSKI (Figs 3, 4, 6, 9)**

Olgia modesta RADOSZKOWSKI 1877: 33, male, female. Syntypes: Uzbekistan: Zaravschan valley and Kazakhstan: Kyzyl-Kum (Moscow).--RADOSZKOWSKI 1891: 584 (male genitalia); DE BEAUMONT 1953: 212 (revision); KAZENAS 1972: 142 (Kazakhstan); NEMKOV 1992: 948 (revision). – As *Gorytes modestus*: HANDLIRSCH 1888b: 530 (new combination, original description translated into German), 1895: 864 (description of female).

Diagnosis: *Olgia modesta* is unique by basally and apically constricted terga (as typical for *Cerceris* species). For other characters, see diagnosis at *O. spinulosa*.

Distribution: Kazakhstan, Kyrgyzstan, Tajikistan, Uzbekistan, Turkmenistan.

Records: Kyrgyzstan: 2 males female 4 July 1983 Frunze 1000 m NN; 2 males 1 female 5 July 1983 Con Aryk/Frunze (OLL) – Uzbekistan: 2 males 2 females 30 June 1981 25 km W Samarkand, Aman Kutan; 4 males 21 May 1994 Samarkand; male 23 May 1994 5 km W Djizak

(OLL); Kyzyl-Kum sands; Samarkand; 30 km SW Denau (Nemkov) – Kazakhstan: 3 males 1 female 31 May 1994 10 km E Ddjambul; 4 males 18 June 1992 6km SE Lepsi (OLL); male female 11 June 2001 70 km SE Lensey 46°01'N 79°42'E (SE); South Kazakhstan: Karak mountain; Chirchik region/Dyusembai well; Iliisk (Nemkov) – Tajikistan: male 7 June 1990 Nurek, 60 km E Dushanbe (OLL); Dushanbe; Kammashi; 20 km NW Kurgan-Tyube (Nemkov 1992) – Turkmenistan: Firyuza (Nemkov).

***Olgia spinulosa* DE BEAUMONT (Figs 1, 2, 5, 7)**

Olgia spinulosa DE BEAUMONT 1953: 221, male, female. Holotype: male, Armenia: Yerevan (Lausanne).--DE BEAUMONT 1967: 311 (Turkey), 1969: 84 (Turkey).; NEMKOV 1992: 948 (revision). BITSCH et al. 1997: 234. (key), DOLLFUSS 1991: 191 (key, fauna of former Yugoslavia, without data).

D i a g n o s i s : The species is unique by long, black bristles on tergal apical margins II-IV (II-V in male). It is the only species with such a special character within the Crabronidae species of the western Palaearctic region. Terga are basally and apically constricted as in *O. modesta*, but this character is less expressed as in *O. modesta*. *Olgia spinulosa* shares another important character with *O. modesta*: the diameter of macropunctures on thorax surface is markedly larger than in remaining species. The macropunctures measures 0.3-0.5x of hindocellus diameter and are in average less than a diameter apart, with some larger spaces in between. Punctures in remaining species are much smaller. Interspaces are shiny in both species, with some barley visible micropunctures in *O. spinulosa*. The general color pattern is similar to the remaining species of *Olgia*, but the pale yellow marks are less expressed than in *O. modesta*.

D i s t r i b u t i o n : Armenia, Bulgaria, Turkey, southern part of former Yugoslavia.

R e c o r d s : Armenia: Erevan (Nemkov) – Bulgaria: male 12 July 1990 Kresna; male 11 July 1966 Sandanski (OLL). – Turkey: male 19 May 2002 Göksü-Valley 10 km S Mut, 36°32'N 33°28'E (SE).

Discussion

I will only describe some basic observations about the phylogenetic relationship in the genus *Olgia*, because I did not carry out a cladistic analysis. The genus is, without doubt, a monophyletic group. The following characters come into consideration for autapomorphies: position of episternal sulcus, hindwing venation, mesonotal furrow and latero-apical corner of mesonotum, form of inner eye margin, brush of setae on male sternites III and IV (for detailed description of these characters see BOHART & MENKE (1976).

The genus is divided into two species groups. *Olgia spinulosa* and *O. modesta* together form the "*spinulosa* species-group" with medially enlarged tergites and large thorax punctures (both autapomorphic character states). The enlarged terga are more expressed in *O. modesta* than in *O. spinulosa*. The latter, however, show a remarkable and unique character, a row of black bristles on the tergal apical margins (autapomorphic character state for *O. spinulosa*). *Olgia spinulosa* occurs only in the western Palaearctic and *O. modesta* only in the central Palaearctic. Supposing, that tergites without bristles represent a plesiomorphic character state, this species group originated probably in Central Asia.

The remaining species form the "*maracandica* species group". Morphologically, the species of this group are relatively uniform and differ marginally in color pattern and

puncture. The diameter of thorax punctures is small, compared with *O. spinulosa* and *O. modesta*, the tergites are not enlarged. The distribution ranges of this species are all allopatric: *O. maracandica* occurs in Central Asia, *O. helena* in Ukraine, Turkey and south east Europe, *O. josefgusenleitneri* in the south east Mediterranean region and finally *O. bensoni* in north west Africa. It is noteworthy, that already DE BEAUMONT (1953) expected *Olgia* to occur in Syria, Jordan or Israel, because of the large gap in distribution between Algeria and Turkey.

Within the *maracandica*-species group, the extend of yellow body coloration increase from east to west: *O. maracandica*, which is the darkest species, to *O. helena* (more yellow than *O. maracandica*), *O. josefgusenleitneri* (more yellow than *O. helena*) and finally to *O. bensoni*, which is the most yellow colored species. Supposing, that black coloration is the plesiomorphic state in Bembecini species (LOHRMANN 1944), the species may represent a chain of, in each case, phylogenetic younger species, with its ancestor in Central Asia. A cladistic and geographical analysis has to prove this assumption.

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Zusammenfassung

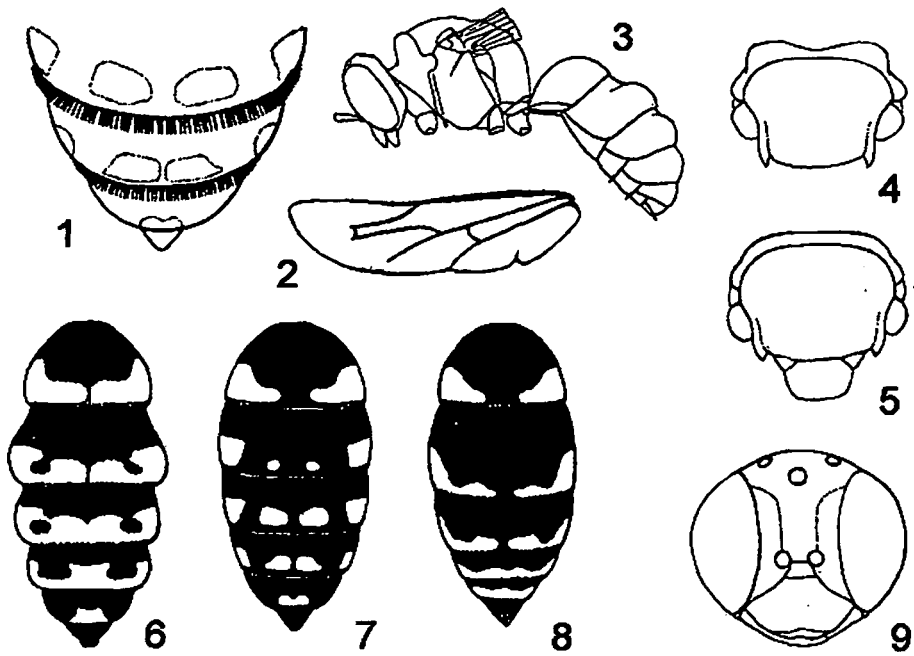
Die westpaläarktischen Arten der Gattung *Olgia* werden diskutiert und kurz beschrieben, ihre Verbreitung summarisch dargestellt und neue Funde aufgeführt. Ein Schlüssel für die Arten wird vorgestellt. *Olgia josefgusenleitneri* SCHMID-EGGER wird als neue Art aus Jordanien und Syrien beschrieben. Die verwandtschaftlichen Beziehungen werden kurz diskutiert. Es können zwei vermutlich monophyletische Artengruppen unterschieden werden, als wahrscheinlicher Ursprung beider Gruppen und damit der Gattung wird Zentralasien angenommen.

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Figures: 1-9. (1) *Olgia spinulosa* female, last terga; (2) *O. spinulosa* female, hindwing; (3) *O. modesta* male, lateral view; (4) *O. modesta* male, thorax; (5) *O. spinulosa* male, thorax; (6) *O. modesta* male gaster; (7) *O. spinulosa* female, gaster; (8) *O. bensoni* female, gaster; (9) *O. modesta* female, head. Figures from DE BEAUMONT (1953).